



## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>PA1679WO</b>	<b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416																									
International application No. <b>PCT/FR2004/000467</b>	International filing date (day/month/year) <b>01.03.2004</b>	Priority date (day/month/year) <b>05.03.2003</b>																								
International Patent Classification (IPC) or national classification and IPC																										
Applicant <b>COMMISSARIAT A L'ENERGIE ATOMIQUE</b>																										
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>6</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>3</u> sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <table border="0"><tr><td><input checked="" type="checkbox"/></td><td>Box No. I</td><td>Basis of the report</td></tr><tr><td><input type="checkbox"/></td><td>Box No. II</td><td>Priority</td></tr><tr><td><input type="checkbox"/></td><td>Box No. III</td><td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td></tr><tr><td><input type="checkbox"/></td><td>Box No. IV</td><td>Lack of unity of invention</td></tr><tr><td><input checked="" type="checkbox"/></td><td>Box No. V</td><td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VI</td><td>Certain documents cited</td></tr><tr><td><input type="checkbox"/></td><td>Box No. VII</td><td>Certain defects in the international application</td></tr><tr><td><input checked="" type="checkbox"/></td><td>Box No. VIII</td><td>Certain observations on the international application</td></tr></table>			<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input checked="" type="checkbox"/>	Box No. VIII	Certain observations on the international application
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Date of submission of the demand	Date of completion of this report																									
Name and mailing address of the IPEA/EP	Authorized officer																									
Facsimile No.	Telephone No.																									

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

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Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1-9 \_\_\_\_\_ as originally filed/furnished
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the claims:
- nos. 6-8 \_\_\_\_\_ as originally filed/furnished
- nos.\* \_\_\_\_\_ as amended (together with any statement) under Article 19
- nos.\* 1-5, 9-13 \_\_\_\_\_ received by this Authority on 04.12.2004 with letter of 02.12.2004
- nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☒ the drawings:
- sheets 1/5-5/5 \_\_\_\_\_ as originally filed/furnished
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, nos. \_\_\_\_\_
- ☐ the drawings, sheets/figs \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
<b>1. Statement</b>			
Novelty (N)	Claims	1-11	YES
	Claims	12, 13	NO
Inventive step (IS)	Claims	1-11	YES
	Claims	12, 13	NO
Industrial applicability (IA)	Claims	1-13	YES
	Claims		NO
<b>2. Citations and explanations (Rule 70.7)</b>			
Reference is made to the following documents:			
D1: US-B1-6 331 490 (STEVENS E HENRY ET AL) 18 December 2001 (2001-12-18)			
D2: US-B1-6 451 657 (MAY CHARLES E ET AL) 17 September 2002 (2002-09-17)			
D3: US 2001/020723 A1 (KADOSH DANIEL ET AL) 13 September 2001 (2001-09-13)			
D4: PATENT ABSTRACTS OF JAPAN vol. 2002, no. 09, 4 September 2002 (2002-09-04) & JP 2002 134544 A (ROHM CO LTD), 10 May 2002 (2002-05-10)			
<p>1. D1, which is considered to be the prior art closest to the subject matter of claim 1, describes (the references between parentheses apply to said document):</p> <p>A method for defining a conductive element on an insulating layer by depositing a conductive layer on the front surface of the insulating layer applied to a substrate, forming a mask over at least one area of the conductive layer intended to constitute the conductive element (figures 13B-C, lines 11 to 25) so as to define within the conductive layer at least one complementary area covered by the mask, wherein the complementary areas of the conductive layer are</p>			

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Box No. V

Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

rendered insulating oxidatively and the oxide is then etched off (265 figure 13H and column 10, line 60 to column 12, line 47).

2. Consequently, the subject matter of claim 1 differs from the teaching of D1 in that the conductive structure is a layer (3) that is etched through the mask, and in that the the conductive layer material and the oxygen form a volatile oxide, whereby the conductive layer at least partially evaporates.

3. The subject matter of claim 1 is therefore novel (PCT Article 33(2)).

4. The problem that the present invention is intended to solve can be considered to be that of preventing leaks, which are one of the disadvantages associated with the use of a solid oxide.

5. The solution to this problem, as proposed in claim 1 of the present application, is considered to involve an inventive step (PCT Article 33(3)), for the following reasons. Even though D1 mentions that oxidation and removal of the tantalum and copper oxide layer 265 can be performed in a single step (D1, column 12, lines 14 to 21), nothing suggests that the material of the conductive layer and the oxygen form a volatile oxide.

6. Moreover, none of the cited documents describes or suggests forming a volatile oxide from the material of the conductive layer and the oxygen originating from the oxidation, whereby the conductive layer at least partially

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;  
citations and explanations supporting such statement

evaporates. Consequently, the decision to use a volatile oxide to solve the problem stated in paragraph 4 of this report is considered to involve an inventive step (PCT Article 33(3)).

7. Claims 2 to 11 are dependent on claim 1 and thus also comply, as such, with the requirements of novelty and inventive step of the PCT.

8. The application fails to meet the requirements of PCT Article 6, as claims 12 and 13 are unclear. Indeed, the features described in device claims 12 and 13 refer to claim 1, which is a method claim, resulting in a mixture of claim categories. Consequently, claims 12 and 13 do not clearly define the device in terms of technical features. Contrary to the requirement of PCT Article 6, the restrictions that these features are intended to define are not clear from said claims.

9. In spite of the above-mentioned lack of clarity, the subject matter of claims 12 and 13, when considered as independent claims, is not novel within the meaning of PCT Article 33(2). Consequently, the requirements of PCT Article 33(1) are not met.

10. Indeed, D2 describes a device comprising a conductive element placed on an insulating layer (figure 10, elements 74 and 20; column 9, line 65 to column 10 line 34).

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Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

The application fails to meet the requirements of PCT Article 6, as claim 1 is unclear. Indeed, the formation of a volatile oxide requires that certain experimental conditions be satisfied, and claim 1 in its present form does not provide sufficient information to allow a person skilled in the art to arrive at the method of claim 1.